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ABSTRACT

This paper concerns itself indirectly with the, as yet, unfounded fear held by many instructors: that relative to their students, they are computer illiterate. To the contrary, faculty teaching information technology designated classes in the Department of Health Sciences at East Tennessee State University have found that they are pacing themselves ahead of the students. While most students are anxious to jump forward into the computer age, there are some who are against it that must be motivated. This paper describes the authors' attempts to create an environment in which reluctant or disinterested students are compelled to make a small, but active effort to use computers very early in the semester. This sets the tone for such students to be pulled into the larger, more comfortable and very creative atmosphere of student-based technology sharing. (Author/AEF)

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Technology at the Trailing Edge

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Abstract

This paper concerns itself indirectly with the, as yet, unfounded fear held by many instructors; that relative to our students, we are computer illiterate. To the contrary, faculty teaching "information technology" designated classes in our department have found that we are nicely pacing ourselves ahead of the students. While most students are anxious to jump forward into the computer age, there are in fact some that we must drag in kicking and screaming. This paper deals directly with this latter process. We attempt to create an environment in which reluctant or disinterested students are compelled to make a small, but active effort to use computers very early in the semester. This sets the tone for such students to be pulled into the larger, more comfortable and very creative atmosphere of student-based technology sharing. Some of the suggestions for encouraging student participation in technology, contained here, may appear elementary but are based explicitly on experiences with reluctant students along the way.

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Introduction

Over 70% of our students maintain full or part time jobs. Over 25% have to drive over 15 miles to get to school. They are increasingly demanding of more interactive and effective learning formats. They want classroom time to represent an active learning time. They enjoy student-based and group-based learning formats but complain of not having time to meet outside of regularly scheduled class time, principally because of employment responsibilities and distance to and from school. Some students work part-time for computer services or local computer stores and some work as computer programmers out of their own homes. Others have never used a computer and have managed to completely elude the rigors of "information technology" until entering our classes...

- Instructors teaching classes with the "using information technology" designation or simply incorporating ne technologies into their classes, in our department, are finding that we have not yet been outpaced by students in the adoption of computer technology. Approximately 50% of students entering our classes have computers at home. Approximately half of these students are networked. By way of comparison, nearly 90% are cable television viewers; few of whom consciously practice selective viewing. While virtually all ETSU students

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have access to computer laboratories at ETSU, nearly 50% of students polled in our classes do not activate their computer accounts each semester, unless required to do so. Unless they have blocks of free time between classes, those networked at home may choose not to use ETSU's computer laboratory facilities. Others unwittingly position themselves at "the trailing edge" of technology by avoiding contact with computers. Anecdotally, reasons for not activating computer user accounts include:

- the student falls under the old catalog, prior to implementation of the "using information technology" designation; they see no need to activate computer accounts as information technology classes are not a requirement for graduation for them
- the student does not know how to activate their user account (consists of determining an ascribed username and selecting a password)
- time and nuisance factor associated with reactivating user account each semester
- the student has no classes baring the information technology designation in the current semester
- computer assignments can be completed with assistance from others
- computer labs appear too busy (we direct students to less busy labs on campus)
- the student is unaware of the value or the mechanics of network search and computer facilities
- instructors have failed to assist with above

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The Sales Pitch

How do we get these students who are somewhat less interested in technology to get on line and start surfing the net? We start by openly encouraging both students and faculty to buy home computers and to get networked. The following are the top 6 reasons we suggest when encouraging students to buy computers:

- time savings performing information searches and writing papers and presentations
- money savings with fewer trips to the library and no typing fees
- preparation of professional quality essays, papers and multimedia presentations
- multimedia learning resources are available
- to be competitive with other students using technological tools
- to develop sufficient computer literacy to be employable

Now, look at the top 6 reasons students listed when asked why they bought or wanted to buy a computer (students were not provided with a list of "cooked" suggestions). We feel we have successfully incorporated elements of all 6 into our developing information technology classes:

- "tons" of information available; not just academic (n=13)
- it is possible to e-mail "everyone" (n=12)
- word processing cards, letters and school papers (n=8)
- you can play games (n=5)
- you can chat on-line (n=5)
- you can follow news, weather and sports on-line (n=3)

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The Standard Set by M-SITC

At last year's meeting, the plenary speakers at the Mid-South Instructional Technology Conference (M-SITC) set the yardmarker for what we need to achieve electronically. The briefest synopsis might read, there are no subject barriers, students need to be presented with multimedia rather than simple text, and students should have electronic access to professors around the clock.

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Subtly (?) Encouraging Students to Move Ahead

Activating accounts: Our biggest concern right now is getting all students to activate their computer accounts. ETSU students pay technology fees of over $100 per semester; we want them to get their monies worth and we believe that those who use the facilities do. We physically accompany students to computer labs during regular class time to make sure they activate their user accounts. Students are required to independently complete simple on-line assignments making it necessary for students to i) activate their ETSU user accounts, ii) go on-line and iii) use academic electronic bulletin boards or chat lines set up for their specific class. We make it clear that, although we are not spying, our classes are designated "information technology intensive," and we do check to see who has activated their user accounts. A number of students are surprised early each semester to find that we actually can tell that they e-mailed us using someone else's account or that they did not personally access required material on our web site.

Put students in the pilot's chair whenever possible: We have the good fortune to have a small department computer lab with 7 new computers, a color printer and a computer projector. When students have questions about computers, we sit them in the pilot's chair and let them demonstrate the problem. We help them find a solution while they remain in the pilot's chair and continue to operate the keyboard and mouse. Schedule time with your students in a computer lab. When they have problems, go with them to a computer terminal, put them in the pilot's chair and help them find the solutions.

Creation of student home pages: We encourage each student who is networked to create their own home page. Typically, servers charge no additional fees for subscribers to post a personal home page. This provides an excellent opportunity for students to learn to download programs from the net, to use file transfer programs, to post text, pictures and sounds on the net and to flex their creativity. One microbiology major has posted a page in which he provides his class notes for those who miss classes and posts answers to class study questions. Two exercise science students posted and presented an entire PowerPoint-based multimedia "continuing education" workshop session on the net. Additionally, students have shared home page addresses, home page design tools and technological skills.

Chat line discussions: Students listed chatting on line as the #4 reason for buying a computer. We have set up a password protected electronic bulletin board and chat room for each of the individual classes. We have achieved 84% overall participation this semester with participants logging in an average of 12.8 times each only half way through the semester. Each class determines a specific time to engage in academic discussions. Human physiology discussions, for example, are Wednesday and Thursday nights at 9 p.m. Students discuss answers to multiple choice and true/false bonus questions. Generally, 15-20% of the class participates in these on-line discussions. The purpose is to encourage students to develop and enjoy their new found ability to meet and complete components of assigned group work over the net.

Electronic jeopardy: In our poor person's version of Jeopardy, we put students in small groups at networked computers in various rooms throughout the department. I then post a question on the chat line and the 1st group to post back a correct answer is awarded points. Although there are no prizes, the students love to play for even 5 or 10 minutes a week. Again, this brings the whole class up close and personal with the possibility of group communication and meetings over an existing chat line set up especially for them.

The software fair: Some of our enterprising faculty put together a glitzy software fair to present software we judged as reasonably priced, of good quality and related to the subjects we teach. This year the fair was attended by over 100 students. Hourly prize draws provided students from all health related disciplines with useful anatomy and physiology software programs and computer-related accessories.

Health in the News and Letters to the Editor: We want our students to be aware not only of the scientific sources of information on the net, but also those that are written for consumption by the general public. To this end, students are required to present a health related article found on the net and to submit a letter, via e-mail, about a health related issue to the editor of one of our local city papers.

Shame, shame, shame: Would you feel guilty suggesting to your students that if they can afford TV cable, they can afford to be networked? We suggest to our students that they can safely cancel their newspaper subscription, as there is unlimited news on the net, and their TV cable subscription without suffering any dire consequences.

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What do students want instructors to post?

The most challenging aspect of technology is finding out what students want and trying to provide them with it. Some of the things the students ask us to provide on the website are simply beyond our current technical reach. Ultimately, students want a "virtual professor" available to discuss their specific questions immediately, at any time and through spoken rather than typed language. Philosophically, it is not an unreasonable request and it is one that will likely be fulfilled by the time our students' children are in college. Philosophically, some of our colleagues make the case that students cannot learn from a virtual professor as students cannot ask the right questions. Our philosophy might be that we need to teach science students to ask questions more effectively. Most importantly, we continually let our students know that we welcome their suggestions for implementing new technologies, but that we are limited by our knowledge of technology.

Grades: ETSU provides grades and registration over a secure networked Goldlink system. Thus, students have become accustomed to obtaining grades electronically. They like the idea of accessing grades of any kind as early as possible. We have posted student grades in a secure password protected format linked to our website. Students can get up to the minute grades during the tenure of a course. Grades for individual assignments, cumulative grade and letter grade are all available. Students can choose to print grades on a page which includes no identifying marks; making it possible for a student to anonymously print a grade page in a crowded computer lab, if desired.

Assignments and exercises: We post all exercises and guidelines on the net. This is an advantage for the student and the instructor. The student can see an assignment the second it is posted, before it has been given in class. The student who misses a class does not miss the assignment. The instructor does not have to make photocopies of the assignment and does not have to worry about finding copies of previous assignments for students who missed a previous class. This represents a significant reduction in photocopying time and money. Students still have a tendency to print out these assignment pages, even though they can access them at any time.

Submission of assignments: Our initial reluctance to accept completed assignments on disk or via e-mail stemmed from our dependence upon the "hard copy" and the pen for grading purposes. Once we began accepting papers on disk, we found that our initial fears of having to deal with countless document formats were completely unfounded. Students tend to use fairly up-to-date versions of popular software and only rarely has it been necessary to ask a student to submit a document in ASCII characters because of software incompatibility problems. Secondary concerns about grading (for example, writing comments on the document being graded) quickly disappear once you realize how easy it is to type comments directly into the submitted document or to switch back and forth between the document being graded and a second document containing your comments. The ETSU Writing and Communication Center has promoted the use of Pegasus Mail with HTML markup for document submission for proofing. This provides the students with a mechanism whereby they can submit reasonably well formatted documents electronically; no more nasty paper or disks. We are currently incorporating links into our anatomy and physiology website for direct e-mail submission of HTML compatible documents for grading, as already in use on our Writing and Communication Center website.

An open line of communication with the instructor: Instructors should provide an electronic venue whereby students can contact them around the clock and around the calendar. Keep in mind that students study at night and on weekends, times during which they may be unable to reach an instructor by telephone. Even though a student may not get immediate feedback from an e-mail, they feel some satisfaction in knowing that they have initiated a communication. The biggest shortcoming with e-mail is that you are communicating with one student at a time unless you enter all of your students' e-mail addresses into your e-mail address book. We tell our students to e-mail us whenever they like but request that they post curriculum-based questions or questions that they feel would interest the class, as a whole, on the electronic bulletin board. This gives others the opportunity to read instructor's responses to posted questions and to link related comments to the discussion board.

An open line of communication with the other students: Students can addend personal information such as e-mail addresses to the bulletin board. Software to run bulletin boards and chat lines is available at very reasonable cost.

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Developing a website compatible with the trailing edge

"Your own server." The most common phrase we have heard over the last few weeks is, "You need your own server." Ultimately, to manage and control all of the content and all of the operation of your website, you probably do need your own server. Without your own server, you are ultimately at the whim of someone else. If anything happens to the server your website is on, you are out of business.

Multimedia "light": MTTC has already set the mark; we need to provide our students with multimedia learning resources. When encouraging your students to use home computers to access your website you need to be concerned about the time required to load pages onto slower computer processors. However, you need to be able to post sounds, images, animations and interactive program files without hesitation. Generally, a small sound file takes longer to load than a small animation. Small sound files can be looped to play continuously such that they play like long sound files. "Animation optimizer" programs are available at low cost to remove unnecessary pixels from animations to reduce their loading time. Photographs (not line drawings) can be scanned at low resolution without losing significant visible quality when posted on the net.

Keeping links simple: We used to provide students with addresses (URL's) and they needed to use those URL's to access the chat line, grades or other information. Now we have linked our web pages to the university pages and created a streamlined pathway to the anatomy and physiology website. Now, students can navigate through every page of the website using only animated or simple text links. We encourage students to use the Java-based bulletin board and chat room in which they can type URL's in their messages and the "URL text" automatically becomes an active link. Quite frankly, the students like creating something that someone else can click on and go somewhere.

Chat lines and grade updates: These are 2 services you can provide with minimal instruction. Students appreciate both of these services. Throughout a semester, 90% of the students will use the chat line. We have had only 1 student (<1%) who initially requested that their grades not be made available over the net and that student subsequently changed their mind. If there is a way students can get on a chat line or access grades on line, they will figure it out.

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Conclusion

Your students will appreciate all of the work and planning that you put into making their classes more informative, more effective and more entertaining; more enlightening, if you will. They will appreciate the time you spend reviewing software and technology for their benefit. Ultimately, this implementation of technologies requires time for retraining and time for development. The initial time invested is well worth the time savings at the other end of the tunnel. Just remember, students are human. After all of this hard work and careful planning you will have students who simply cannot remember their password. You will have students who experience every imaginable and every unimaginable difficulty with their home computer and with the server through whom they subscribe to the net. You will have students who hate computers but who, halfway through the semester, suddenly decide that computers are alright after all; they will need a lot of your time and help to catch up to the other students. Perhaps most interesting of all, you will be faced with students who are seeking the single "golden program" that will let them do everything there is to do on a "cutting edge" computer. They are like the child who hopes to learn to play a musical instrument with a single lesson. Just don't forget, no matter how much you would like to get your hands on the same program, it simply does not exist, except in the dreams of those of us at the trailing edge.

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